

## Health Care-Associated Infection Data Summit: Discussion Highlights

On May 30-31, 2012, the U.S. Department of Health & Human Services (HHS) Office of Assistant Secretary for Health (OASH), together with the Office of the Assistant Secretary for Planning and Evaluation (ASPE), convened the “Health Care-Associated Infection (HAI) Data Summit” in Kansas City, Missouri, bringing together more than 200 frontline practitioners, patient advocates, and experts in information technology representing 44 states and the District of Columbia, to review existing data sources and make recommendations for the HAI data supply chain. The HAI data supply chain originates with data collection and reporting by health care facilities and produces outputs used by facilities for their own prevention purposes and for analysis, action, and public disclosure at state and national levels. The summit focused on six Key HAI Data Questions related to methodology, technology, and public reporting:

Please see note on page 8 regarding highlighted questions below:

1. When, how, and for which HAIs should the transition be made from traditional methods of case finding and reporting—which depend to a large extent on application of written protocol instructions by individuals working in health care facilities and manual methods of data collection and entry—to computer-based algorithms for case detection and use of electronic data sources for populating and submitting numerator and denominator records?
2. With increasing adoption of electronic health records (EHR) systems and advances in information technology for detecting and reporting HAIs and for collecting and submitting closely related data, what actions need to be initiated or intensified to ensure that the data supply chain is as fully developed and widely used as possible, produces validated data, and meets prevention, public reporting, and payment purposes?
3. With HHS analyzing and reporting HAI data acquired through a variety of programs and systems, each with its own methodology, and because these differences sometimes produce incongruent estimates of HAI scope, magnitude, or trends, what are the priorities of stakeholder groups as policies for HAI data reporting are being addressed?
4. What policies and standards are needed to facilitate consistent public reporting of the Centers for Disease Control and Prevention (CDC) National Healthcare Safety Network (NHSN) data at the state and federal levels, and how should those policies be identified, developed, or maintained?
5. What can and should be done to improve, extend, and sustain efforts at the local, state, and national levels to validate facility-specific HAI data that are collected, analyzed, and publicly reported?
6. Moving forward, what ongoing relationships, informational forums, and policies are needed to help states, and other key stakeholders, meet our common goals in the [\*National Action Plan to Prevent Health Care-Associated Infections: Roadmap to Elimination\*](#) (HAI Action Plan)?

The information that follows provides a brief overview of plenary sessions but focuses on discussions during Ambulatory Surgical Centers (ASC), End-Stage Renal Disease (ESRD) facilities, and Acute Care Hospitals (ACH) track sessions and on Key HAI Data Questions. For a more detailed accounts of the plenary sessions, please refer to *HAI Data Summit Summary*.

## **Day 1: Wednesday, May 30, 2012**

Mary Brennan-Taylor opened the summit by telling her mother's story and reminding participants of the human cost of HAIs. She encouraged summit participants to think about patients during their discussions and consider whether their recommendations and suggestions would have saved Alice Brennan and the estimated 100,000 others who die each year from HAIs. Mr. Muntz, MBA, Principal Deputy National Coordinator for Health Information Technology, then welcomed participants, describing, his experiences creating a system to track and suggest treatments for leukemia patients with HAIs without waiting for confirmation of the pathogen, and implementing blood testing for hepatitis C at his institutional blood bank. Mr. Muntz pointed out the value of using EHRs to track HAIs and enhance patient safety and, in conclusion, emphasized patient safety as a moral imperative. Don Wright, MD, MPH, Deputy Assistant Secretary for Health, then discussed the HAI Action Plan.

The remainder of the first day of the summit was devoted to three plenary sessions on EHR systems and standards, HHS HAI reporting systems, and national and state data validation efforts. The day ended with concurrent track sessions in which summit participants engaged in discussions addressing key questions for ASCs, ESRD facilities, and ACHs.

## **Plenary Sessions 1, 2, and 3**

Summaries of the plenary sessions, together with Power Point presentations, are available at the Events [page](#) of the [HHS HAI Initiative page](#).

## **Track Sessions**

### **A. ASCs**

The purpose of this session was to review the ASC Chapter of the HAI Action Plan, move forward with the HAI Action Plan's proposed metrics and outcome measures, and gain feedback on potential data sources and methodological options for accurately assessing the burden of HAIs in ASCs.

### *Data Sources*

- Some advocate for a mixed approach [traditional/manual and electronic methods of case finding and reporting] where process measures apply to all procedures and where outcome measures apply to a subset of procedures; focus on high volume, high risk procedures
- The yield from surgical site infection-only measures, based on states' experiences, is of concern
- Other [broader] outcomes would be supported, e.g., hospitalization

- There is strong interest in both outcome and process measures, but process measures are favored. Some process measures proposed were:
  - Checklists for sterilization, decontamination processes and other safety-related procedures
  - Safe-injection practices / re-use of vials
  - CMS infection control worksheets
  - State accreditation surveys
  - Glucose monitoring
- In terms of timeliness and feasibility of implementation for a national measure, Medicare claims (Parts A&B) data are likely the best starting point (near term). For long term, there was general consensus that all age groups should be tracked.

### *Methodological Options*

- Syndromic surveillance data, pharmacy data, and private payer data could be used to track ASC-related measures.
- Facility infection control risk assessment plans should be standardized, along with discharge instructions to patients regarding follow up.
- There is concern about missing events related to bloodborne pathogens due to the proposed short follow up period.
- A mechanism to track outbreaks was proposed to address missing events related to bloodborne pathogens.

### **B. ESRD Facilities**

The purpose of this session was to identify the status of HAI data reporting among the various dialysis organizations types throughout the United States. Participants also were asked to identify gaps in the current process for HAI data reporting and priorities for efficient, effective management data management.

Discussion and recommendations focused on several major themes related to the identification, processing, validation and evolution of HAI data for the purposes of public health and patient-centered policy development and implementation.

### *Standardized HAI Definitions*

- As long as HAIs are variously defined and subjectively assessed, some variability will be inherent in HAI data reporting.
- Compounding this variability, HAI definitions vary among HHS agencies.
- HHS agencies should use consistent data elements when defining HAIs.
- Although current [NHSN] definitions are imperfect, they provide a consistent foundation that can evolve to meet changing needs.

### *Data Interoperability to Reduce Reporting Burden*

- Providers, facility leadership, and other staff have devoted time and other resources to begin to learn NHSN.
- Committing additional ESRD resources to learn additional reporting systems would be onerous.
- Participants recommend reporting HAI data to a single system that processes, separates, and shares portions of the data among governmental systems.
- Participants were concerned that different HAI data elements are requested by CDC's NHSN and CMS's CrownWeb (CW).
- To further reduce burden, certified EHR systems should be capable of bidirectional data exchange with government data systems.

### *Data Validation*

- When patients read public reports, they assume that the information can be trusted to inform health care facility choices.
- This underscores the importance of validating data that also will be used to improve quality within facilities.
- Internal and external validation at each level of the HAI data supply chain is necessary to ensure accurate reporting.
- At present, large dialysis organizations (LDOs) implement their own systems of internal validation, data entry, and feedback.
- Small, medium, and independent dialysis facilities may not have internal data validation systems or resources; nor is there consistent support for establishing internal data validation through such external entities as ESRD Networks (NWs), professional ESRD societies, or state-based groups.
- HHS should undertake an external system of validation for data that are publicly reported.
- Data validation methodologies developed by state health departments, LDOs, and/or ESRD Networks could serve as models for this work.

### *Use of Data to Inform and Develop Policy*

- Participants in the ESRD session support the use of HAI data in policymaking, asserting that such use has potential to both incentivize additional data reporting and improve patient care.
- Efforts should be ongoing to ensure that HAI measurement translates into clinical relevance at the patient care level.
- Current foundational gaps in the HAI data supply chain for dialysis facilities may lessen the accuracy of HAI data reporting.
- The use of electronic technology for HAI data gathering and reporting lags behind policy development and implementation.
- The mismatch between a reliable HAI data supply chain and the policies that depend on it may lead to unintended consequences that negatively affect patient care.

- Attendees strongly recommend attention to coordinating the efficiency of HAI data processes with policy rollout and implementation.

### *Ability to Monitor Patients Across Care Transitions*

- Attribution of an HAI to a dialysis facility is particularly challenging for dialysis patients often are treated by multiple providers in multiple health care settings.
- HAI reporting in dialysis facilities depends on confirmatory diagnosis of infection through the ESRD provider or a facility-associated laboratory.
- Knowledge of HAIs in ESRD patients with infections from other settings (e.g., emergency departments, inpatient hospitals, other outpatient settings) depends upon accessibility of a patient's medical records.
- Ability to access records may be challenging, particularly in facilities without EHR systems or unconnected either organizationally or geographically.
- More than attribution, incomplete care transitions can compromise knowledge that is key to patient care, especially for these medically complex patients.
- Participants called for policies that encourage effective care transitions and data that follow patients rather than facilities.

### C. ACHs

The ACH session focused on the use of multiple data sources and associated challenges, as posed in Key Question 3. To thoroughly address the question, Key Question 3 was reformulated as two questions:

1. Given the range of HHS data systems and metrics in use to monitor HAIs, what strategies are needed to advance the use and value of these for all stakeholders: patients, providers, payers and HHS.

A general theme from these sessions was the importance of having compatible metrics throughout the data systems.

### *National Healthcare Safety Network (NHSN)*

Breakout groups felt that NHSN should be the primary data source for surveillance of HAI events and, when possible, efforts should be made to transition to its use for reporting.

- NHSN is the most appropriate data source for facility and local/state level reporting; one group suggested that it should also be used for provider-level reporting (e.g., surgeon-specific infection rates).
- NHSN can be used to determine number (incidence), rates, and trends for all HAIs.
- NHSN provides the ability to automate data entry, including uploading of denominator information and objective measures such as lab ID events.
- NHSN should incorporate patient-specific risk factors.
- NHSN should provide infection rates as well as Standardized Infection Ratios.
- NHSN should provide more timely information, allowing for instant analysis and response.

- NHSN data should be used for public health purposes such as reporting and taking action.

Negative attributes of NHSN include:

- Data submission to NHSN is labor-intensive data submission;
- Risk for potential subjectivity in the interpretation of definitions; and,
- Risk for discrepancy between documentation and reporting of results.

#### *Medicare Patient Safety Monitoring System (MPSMS)*

Although MPSMS was not considered ideal for general reporting of HAI data, breakout groups felt that it has useful attributes, including:

- Perhaps useful for calculating national rates;
- Offers unbiased chart reviews;
- Combines laboratory and clinical data to give a more accurate clinical picture; and,
- MPSMS chart review process is already happening as part of other HHS efforts.

Negative attributes of MPSMS include:

- Not useful for local/state level analysis;
- Only selected conditions are reviewed;
- Number of charts reviewed may jeopardize statistical validity, including validity at the national level;
- Reviewers follow a “checklist” and need to be trained for chart review;
- There would be a time lag to obtain the information, so it cannot be used for quality improvement or facility level action;
- Maintaining a paper chart for review ecologically unsound; and,
- Chart review process of chart review can be labor-intensive, expensive.

#### *Administrative Claims Data*

In general, administrative data are believed to be unreliable and not of high quality for reporting HAI rates. However, participants identified some uses and even some advantages, including:

- Can be used to assess the charges and costs associated with HAIs;
- Can be used by federal or state auditors to target validation efforts (identify potential under-reporting, returns to the operating room, readmissions within 30 days, codes consistent with potential infections, and others);
- Might be used to help identify potential patient risk factors for incorporation to NHSN;
- Requires no additional resources to collect; and,
- Readily available and easy to access.

Disadvantages of using claims data include:

- Data collected for reimbursement purposes may not accurately reflect infection rates;

- Diagnoses often dependent upon third-party interpretation of physician documentation;
  - “Present on Admission” code makes it difficult to attribute infection;
  - Possible definitional differences based on variation in diagnosis codes;
  - Changes in coding may create problems; and,
  - Receipt of the data not timely for immediate response or actions.
2. Discuss the advantages and limitations of each of these systems, e.g. claims (administrative) vs. epidemiologic data, to develop shared understanding and assess potential for preference based on specific site of HAI.

Comments from this breakout group focused on three key themes: definitions, training and education, and reporting.

### *Definitions*

- Definitions should be clear, simple and objective.
  - Concerns were raised that a simple approach may not reflect the heterogeneous risk in different patient populations.
- Even if definitions are not ideal, it is important to avoid frequent changes because of the risk of creating inconsistent results across time.
- Consistency of definitions across time increases the accuracy of measures of progress from activities implemented to reduce infections.
- One group recommended that changes occur only once a year, at the beginning of the calendar year; such a regular schedule would permit at least a full year’s use of any definition and clear understanding of when to expect changes;
- Definitions should reflect real outcomes and correlate with hard outcomes such as patient morbidity, length of stay, and costs.
- Changes to definitions should be piloted before implementation.
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### *Training and Education*

- In general, there should be more robust training of infection preventionists to optimize consistency in NHSN submissions.
- To ensure consistent data submissions and protect against attrition, training and education should be continuous.

### *Reporting*

- Robust risk adjustment is necessary for reporting results- SIR may not be adequate
- To ensure consistent reporting, the system should optimize the use of automatic electronic populating of data.
- Capture of denominator data should be improve and standardized.
- Partners should work with vendors to get more value from EHR systems.

- Data-mining and validation capabilities must be built into the EHR system.
- Reporting should be consistent, timely, and clinically relevant so that it can be used by providers, payers and the public to measure progress, identify outbreaks early, and support payer decisions.

## **Day 2: Thursday, May 31, 2012**

CAPT Jose Belardo, JD, MSW, Regional Health Administrator for HHS Region VII, opened the second day of the summit by highlighting collaboration between Regions VII and VIII in working with the HAI Coordinator, CDC, and others to develop a series of training sessions for infection control staff in intensive care units (ICUs). The training, which will be conducted onsite in Kansas City and Denver and broadcast by webinar, will address 30 specific needs. CAPT Belardo's remarks were followed by a discussion of the Affordable Care Act by Jay Angoff, Acting Director of Region VII, and a plenary session on ways to enhance the HAI data supply chain. Most of the day was devoted to small group discussions, in which participants again addressed Key HAI Data Questions. Additional small group discussions occurred at the final plenary session, after which Dr. Wright described next steps with respect to information gleaned from the summit. Ms. Brennan-Taylor closed the summit by offering final thoughts.

Highlights from the discussions follow:

1. When, how, and for which HAIs should the transition be made from traditional methods of case finding and reporting—which depend to a large extent on application of written protocol instructions by individuals working in health care facilities and manual methods of data collection and entry—to computer-based algorithms for case detection and use of electronic data sources for populating and submitting numerator and denominator records?

### *When*

Participants reached no clear consensus regarding when. Overall, this question was not specifically addressed, or was addressed only relative to Stage 2 or Stage 3 of Meaningful Use. Thus, a general target timetable seems to be between mid-2013 and 2015. Some participants advocated immediate action on Lab ID events, however.

### *How*

Participants highlighted the need for a graduated approach that first defines denominators. Numerators will require more extensive work with attendant testing. A bridge concept, “computer-assisted” surveillance, was advanced for a plurality of tables, but there was no strong consensus regarding what that entails. Two feedback forms submitted by meeting participants describe computer-assisted surveillance as a hybrid of digital data-driven algorithms that produce probabilities that could be acted upon by infection control professionals.

A predominant subtext was that implementers are the same individuals who currently have little to no additional capacity because of limited resources and time, so a deliberate, well-considered, efficient implementation will be required. To that end, HHS should lead and complete work on a well-defined vocabulary and definitions.

*Which*

Participants expressed clear and strong consensus for beginning with Lab ID Events from NHSN. Beyond Lab ID Events and in rank order, participants expressed the greatest support for transitioning CLABSI, ventilator-associated events (VAE), and CAUTI.

Recommendations often were based on a clear and coherent rationale, particularly the impact of the infection and opportunity costs of execution.

2. With increasing adoption of EHR systems and advances in information technology for detecting and reporting HAIs and for collecting and submitting related data, what actions need to be initiated or intensified to ensure that the data supply chain is as fully developed and widely used as possible, produces validated data, and meets prevention, public reporting, and payment purposes?
  - A clear consensus is required as to which data will be supplied and how they will be used for analysis and action.
  - Federal leadership and a broad-based coalition should address these fundamental issues and supply clear answers.
  - Further collaborative work is needed to assure that data and technology standards are identified, developed, integrated, and maintained throughout the HAI data supply chain.
    - These standards should enable the integration of systems that provide HAI data with operational systems in health care and with other external reporting systems.
  - Concerted public-private partnership efforts are needed to further develop methods, tools, and infrastructure for electronic HAI detection and reporting.
    - These efforts must dovetail with the federal incentive program fostering the adoption of EHR systems that meet Meaningful Use criteria.
  - Federal and state governments are strategically well positioned to stimulate adoption of EHRs that are capable of producing valid HAI data that serve prevention, public reporting, and payment purposes.
  - A well-coordinated strategy will yield benefits at the facility, local, state, and national levels and accelerate a transition from manual methods of case identification, data collection, and reporting to electronic methods that take full advantage of the availability of health care data in electronic form.
3. With HHS analyzing and reporting HAI data acquired through a variety of programs and systems, each with its own methodology, and because these differences sometimes produce incongruent estimates of HAI scope, magnitude, or trends, what are the priorities of stakeholder groups as policies for HAI data reporting are being addressed?

*(Refer to Section C beginning on page 8 for discussion highlights.)*

4. What policies and standards are needed to facilitate consistent public reporting of CDC' NHSN data at the state and federal levels, and how should those policies be identified, developed, or maintained?

*State/Local Level*

- To eliminate duplication of effort and maximize efficiency, consistent reporting mandates and mechanisms should be established between CMS and the states.
- Guidance should be provided regarding appropriate staffing levels, including professional training and skill levels, at health care facilities to meet all reporting requirements while maintaining quality of care.
- States can provide oversight, training, and coordination across state lines if the national reporting mandate is identical for all states.
- Local health departments should assist with HAI reporting as with other communicable diseases.

*Federal Level*

- Federal standards should be provided regarding minimum training qualifications to properly conduct NHSN surveillance.
  - NHSN should provide a certification to NHSN users; users should be required to pass an exam in order to conduct NHSN surveillance.
  - Consider reporting to NHSN as a federal mandate.
  - Standards should be provided regarding which statistics to present, i.e., SIRs vs. rates, confidence intervals, and data validation.
5. What can and should be done to improve, extend, and sustain efforts at the local, state, and national levels to validate facility-specific HAI data that are collected, analyzed, and publicly reported?

*Local/Facility Level*

- Perform and learn from internal or self-validation efforts.
- Expect, anticipate, comply with, and learn from external validation efforts.
- Work with vendors and use electronic medical record (EMR) systems to enhance ability to capture numerator and denominator data.
- Develop “best practices” for accurately capturing numerator and denominator data.

*State Level*

- Coordinate development and promulgation of standardized protocols or methods for data validation with national-level entities.
- To pool resources, explore potential collaborations at the regional level for validation of NHSN data.
- Promote internal or self-validation by facilities by providing educational resources online for facility-level staff.

- Share “lessons learned” from data validation with facilities to improve reporting and facilitate education on definitions and protocols; report common errors seen in data validation to NHSN, if protocol improvements are needed.

### *National Level*

- Develop and promulgate standardized protocols or disseminate consistent methods or guidance for data validation across federal agencies, especially between CDC and CMS; standardized protocols are needed to validate:
  - Both numerator and denominator data;
  - Comparison of data entered into systems (e.g., NHSN) with EMR documentation; and,
  - Lab data to ensure complete case/event ascertainment (i.e., numerator data).
- Set minimum standards for EMR systems and vendors related to reporting, analytical, and validation capabilities.
- Provide consistent definitions for health care-associated infection surveillance.
- Consider
  - providing consistent funding to state health departments to perform data validation;
  - lowering validation costs for state health departments (e.g., using a targeted approach to identify underreporting, leveraging fees to offset validation costs); or,
  - Forming a public-private partnership to ensure sustainability of validation programs and limit reliance on federal funds for data validation.
- Coordinate among federal agencies to maintain statistically strong, rigorous, and reliable validation methods.
- Provide education on data validation to state level entities and consumers.

### *In General*

- Consider using automated programs or information technology queries to ensure coding/electronic data capture is correct.
  - Perform data validation before data are publicly reported.
  - Frame/view validation as a quality improvement effort rather than a punitive exercise; use validation results for provider and infection prevention education.
  - Consider resource limitations of smaller or resource-limited facilities.
6. Moving forward, what ongoing relationships, informational forums, and policies are needed to help states, and other key stakeholders, meet our common goals in the HAI Action Plan?

### *Ongoing Relationships*

- Continue the inclusion of consumer representation at forums and in other key areas, including consumer presentations regarding consumer engagement.
- Frontline caregivers should be increasingly involved in the conversation.

- Relationships, communication, and coordination among providers, payers, and local, state, and federal governments should be initiated and maintained, especially since state legislative mandates have proved powerful.
- To ease implementation, improve the alignment of the thousands of stakeholders working to reduce HAIs.
- Continued discussion between hospitals and system vendors, including vendor outreach and presentations to small facilities.

### *Informational & Educational Forums*

- Develop state-of-the-art educational forums, e.g., webinars, for health professionals.
- Make available educational forums for the public regarding specific measures that patients and family members can take to prevent, recognize, and care for health care-associated infections.
- Increase awareness efforts of the HAI Action Plan goals and strategies.
- Offer high-quality online re-training curricula that provides continuing education credits.
- Provide additional training forums for state health departments on the analysis of NHSN data.

### *Policies*

- CMS should partner with states in the review of data validation protocols, including chart reviews.
- A “common thread” should exist among reporting systems to remove redundancies and inconsistencies.
- Vendor systems certification is needed.
- Ratios of facility bed size to infection preventionist staff should be mandatory.

### *Other*

- Over time, HAI Action Plan goals should be expanded to include all types of health care-associated infections.
- Sustained source of funding, e.g., Recovery Act funds were extremely helpful and accomplished much.
- Increase the timeliness of data submission reports from facilities to state health departments.